



**M/V Northstream**

**Ocean Alexander 70**

## **OPERATING MANUAL**

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## Overview



Saloon Entry



Saloon with Pop Up Television (on left)



Galley

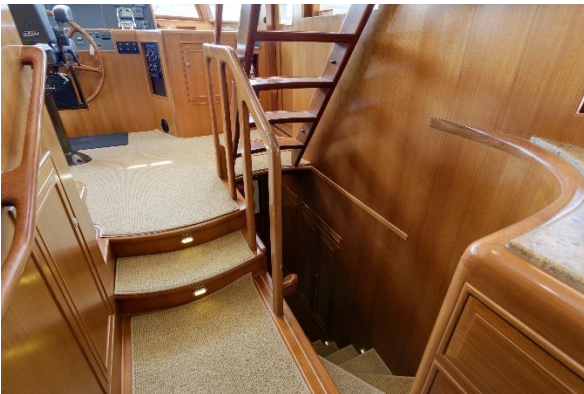




Pilothouse Helm Station



Pilothouse Seating





Flybridge Seating



Flybridge Helm



Upper Deck with Tender





Upper Deck Storage and BBQ Grill



Master Stateroom



Master Stateroom (Engine room, laundry, shop, freezer and crews quarter access on left.)



Master Stateroom with TV



Bunk Room



Guest Stateroom





Guest Head



Crew's Quarters

## General Information & Specifications

### General Information & Specifications

Ed Monk Jr designed Ocean Alexander 70 Classico LRC Motoryacht

Year: 2003

Length: 71' 2"

Beam – 17' 9"

Draft – 4' 6"

Air draft – With antenna's Up: 34', With antenna's down: 26', With anchor light down: 24'

Displacement – 91,350 lbs. dry

Fuel Capacity – 1,350 gallons

Water Capacity – 360 gallons

Holding Tank Capacity – 100 gallons (main) + 18 gallons (crew)

Cruising Speed – 11 knots

Top Speed – 18 knots

Engines – MTU/Detroit Diesel Series 60 - 825HP mains

### Numbers

Hull Identification No. OAX70001L203

Delivery Date: December 20, 2002

## Equipment and Manuals

“Digitally Stored” indicates that the manual is stored on Dropbox [here](#) or on a thumb drive attached to the PC Navigation computer.

### Owners Manual

Digitally Stored

### Main Engines & Controls

MTU/Detroit Diesel Series 60 - 825HP mains with Twin Disc model DD-5114A gearboxes with 2.50:1 ratio. DVD service manual stored onboard in the software box in the documentation cabinet and Digitally Stored

Glendinning Complete Controls, EEC-3 or EEC-4, two lever electronic engine controls – 24VDC. [Installation & Troubleshoot](#), [Quick Reference Guide](#), [Installation Manual](#), [Installation & Operation Manual v8.0A](#), Digitally Stored

Glendinning Handheld Remote, [User Guide](#), [Installation and Operation Guide](#), Digitally Stored (Remote control is on-board, but not authorized for use by anyone except owner.)

Bennett Trim Tabs, Electronic Indicator Control Kit EIC5000 [Installation Instructions](#), Digitally Stored

Cobham ACR RCL-100D Remote Control Searchlight, [Manual](#), Digitally Stored

Quick Nautical Equipment Evolution Chain Counter CHC1202M [Manual](#), Digitally Stored

AmbientNAV LCD, Digitally Stored

Everplex 8CQ Camera Controller, DeckScan P/T Camera

Textron Video Splitter VSA12/VSA14/VSA18

Reverso 12/24V DC Oil Change Systems

Simrad AT10 Universal Convert NMEA0183/SimNet

Keypower KPRF7.5SF (or 6 SF) Hydraulic Stabilizers, No eManual, Digitally Stored, [Website](#)

### Maretron Binders (in bag or box)

Maretron DSM 250 engine monitoring system; [Manual](#), Digitally Stored

### Electrical and Electronics Binder

PowerMax 40 dB Gain Dual Band Wireless Amplifier/Repeater System

Multi-function display with Nobeltec Max Pro Navigation Software v11, with Jeppesen Marine Radar. [Manual](#) Digitally Stored

ICOM VHF Radio IC-M604; [Info](#); Manual Digitally Stored

TRULink 4 Port DVI and USB KVM with audio Model 52089 [Manual](#) Digitally Stored

PSea Concepts – LCD Concepts 6-Port Switch for Furuno NavNet MES-6P-F, [Manual](#) Digitally Stored

Digital Antenna, Multi-Band Panel Antenna, Model 426-PW, Digitally Stored



PowerMax 40 dB Gain Dual Bank Wireless Amp/Repeater (Cellular), [Data Sheet](#), Manual  
Digitally Stored  
SMK-Link VP4810 RemotePoint RF Remote Control & keyboard – Instructions and software in binder.

12V Mastervolt AGM (2) – 200Ah (24V Bank) Port Engine Start  
12V Mastervolt AGM (2) – 200Ah (24V Bank) Starboard Engine Start  
12V Mastervolt AGM (2) – 115Ah (12V Bank) Genset 1  
12V Mastervolt AGM (2) – 115Ah (12V Bank) Genset 2  
6V MasterVolt AGM (8) - 400ah AGM batteries (12V Bank) House & Inverter w/box  
12V Optima Blue Top TrollFury (24V Bank) (4) Bow Thruster  
12V Lifeline Group 8D AGM (24V Bank) (2) Stern Thruster

Charles 5000 20 Amp 12VDC battery charger – generator bank, [Manual](#) Digitally Stored  
Professional Mariner Promatic 21-3 24VDC Charger – thruster bank  
ProMariner ProTech 2420P 24VDC battery charger – engine bank. Dec 2019, [Manual](#) Digitally Stored  
Magnum 2500kW charger for house bank batteries [Check model](#)  
Magnum Inverter Remote Control ME-RC, [Website](#), Digitally Stored  
Magnum Battery Monitor Kit ME-BMK-NS, [Website](#), Digitally Stored  
Magnum MS Series Pure Sine Wave Inverter/Charger MS2812, [Website](#), Digitally Stored  
Magnum ME-ARC, [Website](#), Digitally Stored  
Magnum Generator Auto Start ME-AGS-N, [Website](#), Digitally Stored  
Schumacher SC1280 Automatic Battery Charger (for tender)

Underwater lighting (no manual)

#### Miscellaneous Binder

Northern Lights 20 kw/120/240V/60Hz - Phase 1 generator with sound shield [MANUAL ??](#)  
Northern Lights 6 kw/120/240V/60Hz - Phase 1 generator with sound shield [MANUAL??](#)  
Blue Sea Systems – Automatic Charging Relay ML-ACR; [Info](#); [Manual](#) Digitally Stored  
Maxwell Winches Windlass VWC3500, 12V [Manual](#), Digitally Stored  
Maxwell Winches VX1200 x 2 (Stern) [Manual](#), Digitally Stored  
Glendinning CableMaster system 50A – 125/250V  
Quick Chain Counter CHC 1202M, [Manual](#) Digitally Stored  
SidePower SP240 TCi 24VDC counter rotating dual prop bow & stern thrusters delivering 600 lb thrust each (3 control stations); [Manual](#) Digitally Stored

#### Furuno Binder

Furuno NavNet  
Furuno RD-30 depth / speed / multi-display  
Furuno NavNet with radar / GPS chart plotter / depth sounder  
Furuno NAVpilot autopilot with handheld remote (wired)  
Furuno AIS FA-50 Transponder

#### Heating, A/C and Plumbing

ITR Hurricane II Hydronic diesel heat system; [Info](#); [Manuals](#)  
ITR WaterHeater, Continuous Hot Water; [Info](#); [Manuals](#)  
Grundfos Maintenance-Free Circulators  
Vitrifigo Ice Maker IMXTIXN1-F,  
Cruiseair A/C & Heat Pump; DX Remote & Self-Contained A/C; LP-09 [Manual](#); Digitally Stored  
Cruiseair SMX II Control Systems (DX) [Manual](#); Digitally Stored  
FCI Aquamiser+ 1200 gpd watermaker; [Info](#); Manual Digitally Stored (not available online)  
Brio 2000 Pressure Switch; [Manual](#); Digitally Stored  
Headhunter Mach5 water pump [Manual](#); Digitally Stored  
Headhunter xcaliber 12V Salt Water Pump, XRS-124, [Info](#); [Manual](#); Digitally Stored  
Headhunter Stingray 120V Salt Water Pump, SR115 [Info](#), No Manual  
Shurflo Model 355 Bilge Pumps 12V (7); [Info](#); [Manual](#) Digitally Stored  
Dometic MasterFlush macerator heads in Master and Guest  
Vacuflush Head (Crew) [Manual](#) Digitally Stored  
Dometic Vacuum Generator II; [Info](#); Manual  
Delta T Head Exhaust Fans 4" centrifugal DC fan, 12V, 500-304121 IP, [Manual](#); Digitally Stored  
Dometic SeaLand Tankwatch 4 Level Monitor System; [Manual](#) Digitally Stored  
Sealand T-Series Macerator; [Info](#); [Manual](#); Digitally Stored  
Shower Drain Pumps (master and guest shower), Whale Gulper 220  
Pentair Everpure PBS-400 Water Filtration System (under kitchen counter)  
Johnson Pump SPX UltimaSwitch (12V pressure switch. Not sure where used)

#### Entertainment Binder

SeaTel satellite TV system; Quick Guide Digitally Stored;  
Bose speaker system (operated with remote)  
Flat Screen TV  
Plasma Display Electric Pop-Up Lift (PUL), Chief Manufacturing; [Manual](#); Digitally Stored  
Insignia DVD Player NS-1UCDVD, [Manual](#) Digitally Stored  
Insignia LED HDTV Model number; [Info](#), Digitally Stored  
Samsung Series 3 360 LCD TV  
Samsung Series 3 3600 LCD TV  
Bose Personal Music Center II, [Manual](#) Digitally Stored  
Bose Lifestyle DVD; [Manual](#); Digitally Stored  
Bose 131 Marine Speaker System; [Manual](#) Digitally Stored  
Lifestyle® VS-2 Video Enhancer; [Manual](#) Digitally Stored  
Bose Lifestyle SA-2/SA-3 Stereo Amplifier [Manual](#) Digitally Stored  
SeaTel, Inc Model 2498 Shipboard Satellite TV System  
DirectTV HD Receiver  
TP-Link HA100 Bluetooth Audio, [Manual](#) Digitally Stored

#### Tender Binder

2007 Novurania Deluxe Series 460, Manual Digitally Stored  
2010 Yamaha F90TXR, S/N, [Parts](#), [Manual](#)  
Steelhead Marine Davit – SM1750R; Electro-Hydraulic / 12VDC Hydraulic Motor; 1750 lb. lift capacity. Manuals Digitally Stored

### Appliance Binder

Miele Touchtronic Vented Dryer T8002/8003/8005

Miele Washer W3033

Miele Oven H4682B S/N 07322620, [Manual](#), Digitally Stored

Miele Dishwasher G1262, [Manual](#) Digitally Stored

Miele Ceramic Cooktop KM421/424/427 240VAC

Sub Zero 700TR refrigerator – 120VAC

Sharp Over the Range Microwave R-1514

Insinkerator Evolution Pro Compact

Cuisinart Extreme Brew DCC-2750

Smeg Toaster

Hansgrohe kitchen faucet Talis S, 32040XX1

Sea Freeze of America, FS-Custom Freezer Serial No. 1005117

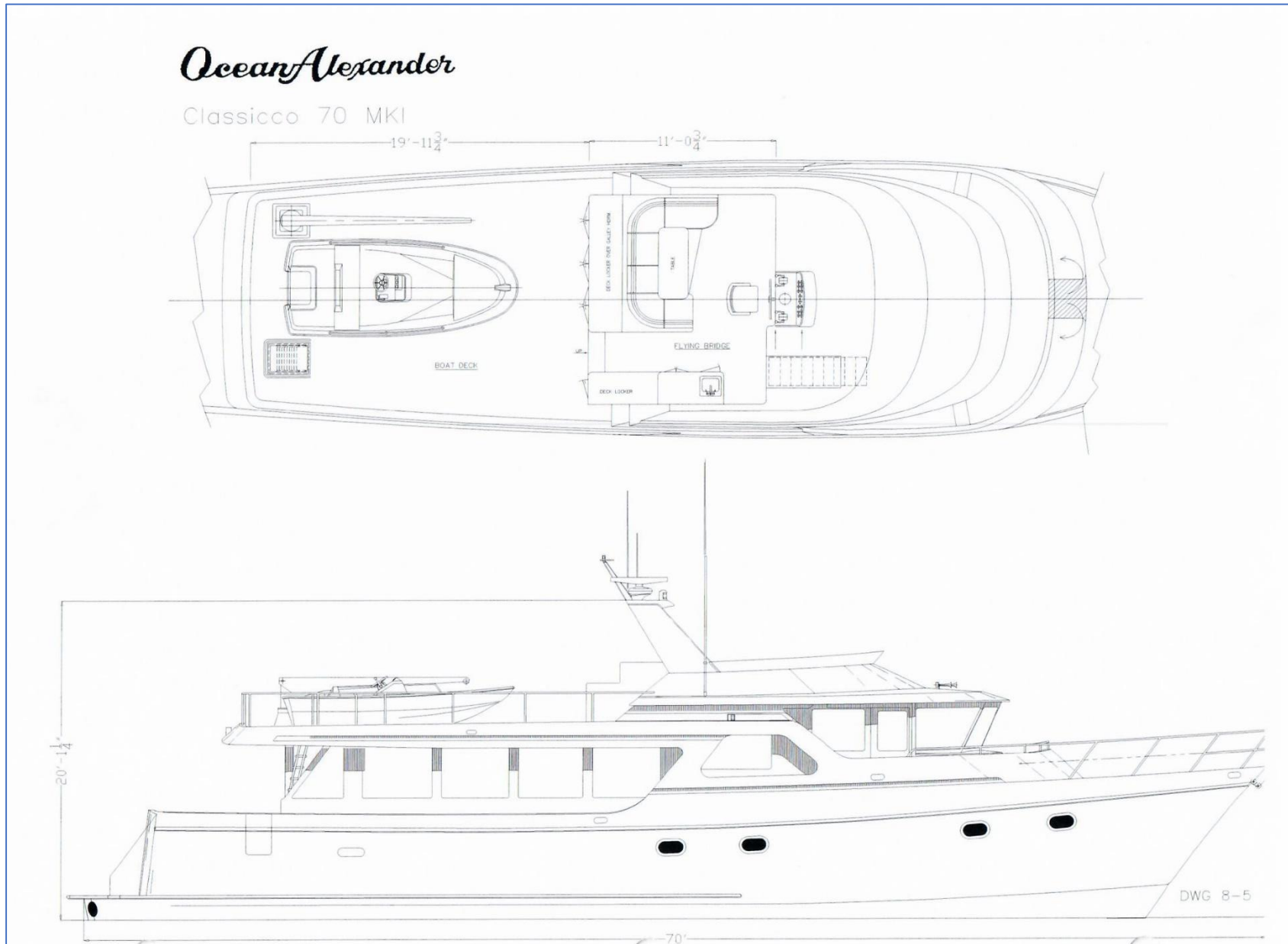
TEC Cherokee FR BBQ Grill Model: GSRLPFR, S/N GSR400794SLJ10, Manual Digitally Stored

Breville Barista Express BES870XL, Quick Reference Guild in Blue Book. [Manual](#); Digitally Stored

Amsec Safe 4000, [Manual](#), Digitally Stored



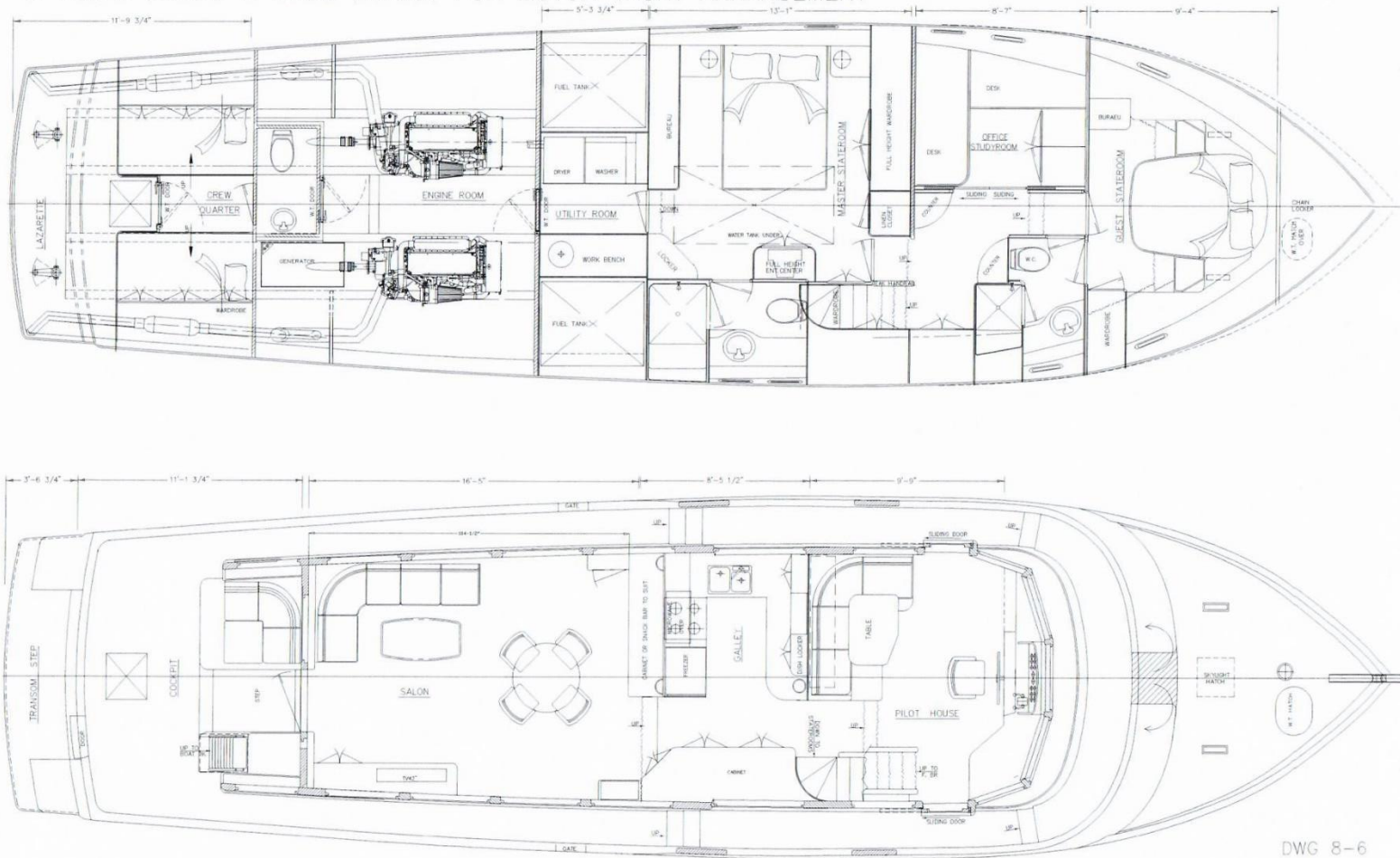
## Vessel Layouts



# *Ocean Alexander*

Classicco 70 MKI

OPTIONAL SALON & CREW LAYOUT FOR MOTOR YACHT ARRANGEMENT



DWG 8-6

## Electrical Systems

Northstream has 12V, 24V, 120V and 240V systems. Input power may be supplied by the engines, shore power or one of the two generators. In addition, the inverter is normally used to provide 120V power from an inverter battery bank. There are separate batteries for the House systems (12V), each of the engines (24V), the inverter (12V), the generator starters (12V) and the bow and stern thrusters (24V, separate banks). There are two generators, 6kW and 20kW, and shore power connections in the bow and stern.

It is important to understand how the electrical systems were designed to operate. The 12V house system charger switch should normally always be on as well as the inverter switches on the panel. The house and inverter batteries will be charged from either shore power or one of the generators. Normally this will be the 6kW generator as it has an auto-start controller which will start the generator when the voltage in the house batteries drops below a specified level, which is set to 11.8V and will shut off when the voltage reaches 13.5V.

Note that the inverter battery bank is not tied to the sensor on the auto-start so if they get low, the 6kW generator will not auto-start. The 20 kW generator must be started when a high current load is required and shore power is not available, and it is manually started from the main electrical panel. Typically, it would be used for: air conditioning/reverse heat, clothes dryer, watermaker, oven or range when not on shore power.

There is a main electrical panel and a secondary, as well as individual breakers throughout the boat and these are noted in the applicable section below. Electrical schematics are provided in the appendix.

You will see that the switches are color coded to coincide with normal operating modes. Following are descriptions of the modes and how they are used.

- Bright Green – Underway, 6 kW as standby generator
- Red – At anchor, 6 kW as standby generator
- Purple – AV systems. There are three breakers required for the Satellite TV and Audio Visual systems. It is best to select all three whenever any part of the system is desired.
- Blue – Optional. Diesel Heat Pump is only used when diesel cabin heat is turned on. Dishwasher should only be turned on when dishwasher will be run to avoid accidental operation and overuse of water and power.
- Orange – Typically used with 20 kW or Shore Power
- Yellow – Optional with 20 kW or Shore Power
- Green – Typically only while on Shore Power

Note that there are two circuits which are not used in normal operating modes. These are the two switches/breakers for the holding tank overboard pumps. These should only be turned on when in legal waters and when the through-hull valves are open. And then turned off after tanks are emptied. Normally these valves are left open, but they must be verified. The valves must be closed when using a dockside vacuum system.



# Primary Service Panel

- Underway, 6 kW standby
- At anchor, 6 kW standby
- AV systems
- Optional\*
- 20 kW or Shore
- Optional on 20 kW or Shore
- Typically only on Shore

\*Diesel Heat Pump is only used when diesel cabin heat is turned on. Dishwasher should only be turned on when dishwasher will be run to avoid accidental operation and overuse of water and power.



★ Holding Tank switches should only be turned on when you wish to dump the holding tanks and only when in appropriate and legal waters. There are separate switches in the bilge which also control the pumps. Make sure that the valves are open while pumping and turn off after tanks are dry.

The AC Selector Switch should be set to 6kW normally, unless running the 20kW generator or using shore power. The 6kW generator will automatically come on and charge the batteries.

## Secondary Service Panel

- Underway, 6 kW standby
- At anchor, 6 kW standby
- AV systems
- Optional
- 20 kW or Shore
- Optional on 20 kW or Shore
- Typically only on Shore



This Master Switch should be left in the ON position during normal operation.

The Watermaker is controlled with this panel. During normal operation press START/STOP to engage or shut down. To shut down, be sure to watch the display panel and wait until it is completed its shut down cycle before turning off the Master Switch.

## DC Service

DC service is provided by 12V house batteries. These are mounted in the forward master stateroom bilge hold. The charger is located behind a panel in the starboard forward master stateroom cabinet. In that same cabinet is a master switch for the house batteries. The house batteries may also be charged using the inverter as a backup.

24V bow and stern thrusters. The batteries and circuit breakers are located adjacent to each thruster. There is a single charger located in the engine room.

The engines have separate 24V starter batteries. There is a master switch panel located in the aft engine room.

The inverter operates on its own battery bank. It provides 125VAC power and is used to charge the inverter bank as well.

## AC Service

The bottom half of the primary Service Panel on the port side of the pilothouse controls both the 120V AC and 240V AC systems. It has a master switch which determines the AC input: Off, Aft Shore, Forward Shore, 20 kW Generator and 6 kW Generator.

There are five discrete areas for control of the AC power:

- Inverter Load #1
- Inverter Load #2
- H1-120V Load
- H2-120V Load
- 240V Load

The inverter only supplies the first two areas. It does not supply 240 VAC. Shore power or the generator is required to power anything on the bottom three: H1, H2 or 240V.

There is also a switch located near the inverter (in Bilge compartment #2 – Passageway) which you can use to override the inverter and supply power from a generator or shore power to the inverter circuits. This allow you to bypass the inverter if it fails.

The 250V AC section is used to power high load circuits such as the washer/dryer, air conditioning/heat pump, cook top, water heater and watermaker. It is possible to supply power to the 250V circuits with the 6kW generator, but most of the 240V loads will trip the breaker. This break is located within the 6kW generator cabinet. The only 240V circuit which might be possible to run (when the 20kW generator has failed) is the cooktop. And in that case it will likely only power one or two burners.

## Inverter

There is a switch to combine the Inverter and House Batteries in parallel which would be used if one of the battery banks were to fail. It is located in the center forward master bilge hold.

The inverter can charge both the house and inverter battery banks via the ACR (Automatic Charging Relay) when set to the auto mode (it will close relay after approx. two minutes after sensing available charge voltage). The ACR can be opened or closed manually, separating the banks. The house bank has its own charger and would be needed if both banks remained separated for charging.

The apparent overlap in functionality adds a certain layer of redundancy, albeit at a lower Amperage (60A).

A control switch is located adjacent to the inverter which will allow bypass of the inverter if it were to fail. This will allow 125V to be available on the inverter circuit via the generators or shore power. **To be installed.**

The inverter batter bank should last all night with only the critical appliances including: galley refrigerator, freezer, flybridge refrigerator and flybridge icemaker. Note that the hot water dispenser in the galley is connected to the Galley #1 circuit and uses substantial power even when water is not running. This circuit should be left in the off position when using the inverter or 6 kW generator.

## Shore Power

NORTHSTREAM has 125/250V 50A AC shore power connections both forward and aft. It is also possible to utilize two 125V 30A AC connections with the available adapter. When stopping at a marina ask for 125/250 50A AC power, if available.

Do not use both the bow and stern connections. See "Two 30A Outlets Available" and "Only One 30A Outlet Available" below for details on bringing 125V 30A AC power aboard when 125/250V 50A power is not available.

Cablemaster (125/250V 50A AC stern connection): The aft 125/250V 50A AC cable is stored in a Cablemaster unit in the lazarette that is controlled by a toggle switch on the transom. Power is supplied by turning on the "Cablemaster" breaker on the 12V panel. Toggle out to unroll the cable, in to rewind it. The cable end is accessible under the customary stainless cap on the transom. Pull out the cable end and unroll it carefully; (don't drop it in the water!). The Cablemaster cable is long enough to reach to a little forward of the pilothouse (less far if trying to reach a starboard connection) and is the easiest way to connect to 125/250V 50A AC shore power.

Note: Ensure that whatever length is used, there is sufficient slack to avoid damage to the connectors. Once plugged in, if the AC panel shows no power, check the stern shore power breakers located under the starboard aft lazarette hatch. Check to ensure they are in the "up" (on) position. If the shore power outlet cannot be reached from the stern, consider backing in to the slip.

If necessary, there is a second 125/250V 50A AC cable in the starboard cabinet on the Portuguese bow that may be connected at the 50A bow connection (change the AC Selector Switch Forward Shore or Aft Shore as appropriate). The breakers for the bow connection are in the same starboard cabinet in the Portuguese bow. They are normally left in the ON position.

## Marinas without 125/250V 50A power available or with low voltage

Many marinas (often in Canada) may not provide 125/250V 50A AC power or may provide unacceptably low voltage on the 220/250 leg (key equipment needs at least 210 V AC consistently). However, if 125V AC 30A power is available, see below:



**Two 30A Outlets Available:** There is a Hubbell combiner in the starboard aft cabinet with two 30A cable fittings combining to one 50A cable fitting. If two sources of 30A are available, this can be used effectively to create ~250V AC at ~30-50A, depending on how the dock is wired. It may require running one of the 30A connectors to a separate junction box on the dock to obtain an alternate phase of power. With the Hubbell connector is a 30A extension cord which can be used for this purpose. This may not provide more than 30A, but it should be sufficient to provide 250V power, provided you are careful not to use more than one high-load appliance at a time.

**Only One 30A Outlet Available:** If using the Hubbell combiner is not possible, connect the 125V 30A AC power cord to either the bow 50A receptacle or the stern 50A Cablemaster power cord using the custom 30A to 50A adapter attached to the 30A cord. Then connect the 30A cord to a 125V 30A dock outlet (with its switch off if possible). Then turn the AC Selector Switch to either Forward Shore or Aft Shore as appropriate and turn on the power at the dock. The 30A setup will not likely be able to power the air conditioners.

If the marina offers a 125/250V 50A connection but the 220 leg voltage provides too low of voltage (Northstream requires a minimum 210V and 220V or greater is strongly preferred), then the 250V breakers must not be turned on. If you wish to use the 250V range, oven, clothes dryer, watermaker or air conditioning while plugged into 125V 30A power as above, you will need to start the 20 kW generator and select it.

**Important Note:** Some marinas don't have breakers at the dock connection. Regardless, you should turn the AC Selector Switch on the AC panel to "off" before plugging in to the dock outlet. Once plugged in, turn the knob to FWD SHORE or AFT SHORE as appropriate, and proceed. If you overload the system at a dock with no breakers, you may have to re-set the boat's shore power breakers located either under the port aft lazarette hatch or in the starboard Portuguese bow cabinet.

## Generators

There are two generators: 6 kW and 20 kW. The 20 kW should be used when shore power is not available and power is required for a heavy load such as the range, oven, clothes dryer, watermaker or air conditioning. The 6 kW generator is much quieter and is designed to start automatically when the house batteries drop below a certain level. Note that if the 6 kW generator is overloaded, a circuit breaker located within the housing will be tripped. Both generators pull from the starboard fuel tank, however the tanks are cross fed, so they should remain at the same fill level.

The 20 kW generator is manually started from a remote switch on the main electrical panel. The 6 kW generator will either start on its own automatically or it may be manually started from the inverter control panel. Both may also be manually started in the engine room.

To start the 6kW generator from the inverter panel:

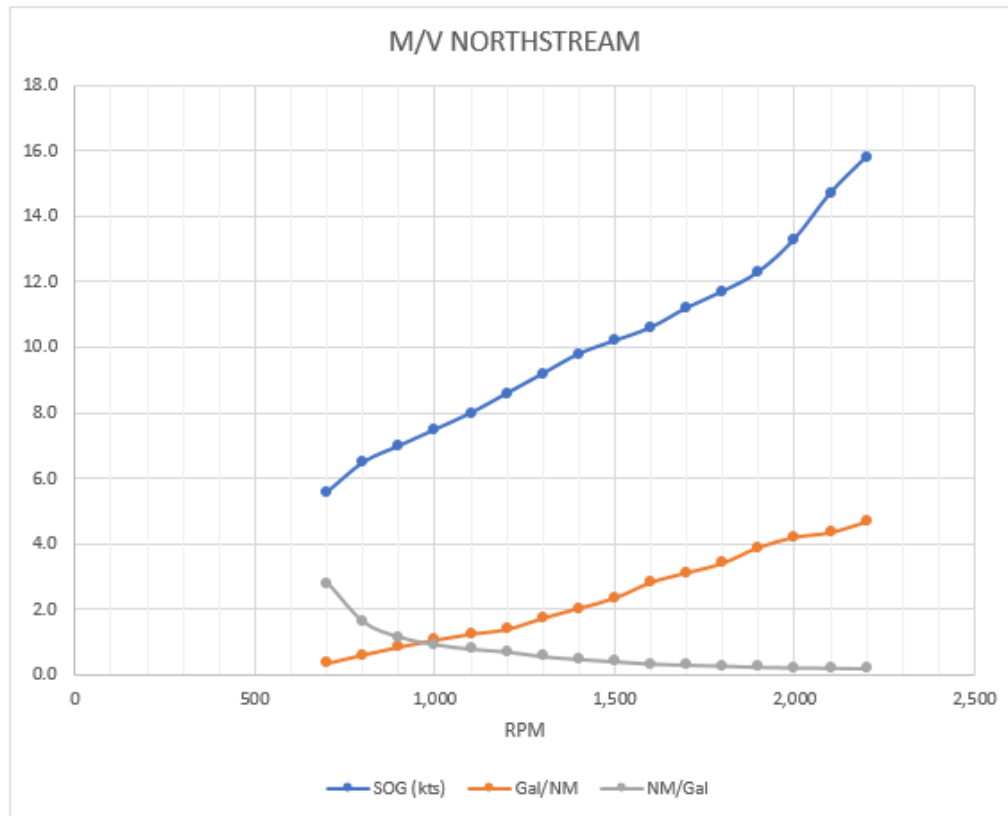
1. Touch FAVS once or twice depending upon whether it is in sleep mode
2. Turn knob to F5 Generator Control
3. Push knob
4. Change to On, Off or Auto. Normal mode is Auto
5. Push knob

To turn Off the generator, follow the same procedure and change to Off. After it shuts down, change it back to Auto which should be the default.

Important Note: Generators should never be run without a load. Doing so will cause the generator to fail or wear prematurely.

## Power Systems & Fuel Management

There are three Control Stations, plus a handheld-wired remote station. The three control stations are the pilothouse, the fly bridge and the starboard aft cockpit. The remote station is not allowed to be used by charterers. Below is the power and fuel consumption curve.



| RPM   | SOG (kts) | Gal/NM | NM/Gal | Fuel Port (gph) | Fuel Stbd (gph) | Total | Range (NM) |
|-------|-----------|--------|--------|-----------------|-----------------|-------|------------|
| 700   | 5.6       | 0.4    | 2.8    | 1               | 1               | 2     | 3,220      |
| 800   | 6.5       | 0.6    | 1.6    | 2               | 2               | 4     | 1,869      |
| 900   | 7.0       | 0.9    | 1.2    | 3               | 3               | 6     | 1,342      |
| 1,000 | 7.5       | 1.1    | 0.9    | 4               | 4               | 8     | 1,078      |
| 1,100 | 8.0       | 1.3    | 0.8    | 5               | 5               | 10    | 920        |
| 1,200 | 8.6       | 1.4    | 0.7    | 6               | 6               | 12    | 824        |
| 1,300 | 9.2       | 1.7    | 0.6    | 8               | 8               | 16    | 661        |
| 1,400 | 9.8       | 2.0    | 0.5    | 10              | 10              | 20    | 564        |
| 1,500 | 10.2      | 2.4    | 0.4    | 12              | 12              | 24    | 489        |
| 1,600 | 10.6      | 2.8    | 0.4    | 15              | 15              | 30    | 406        |
| 1,700 | 11.2      | 3.1    | 0.3    | 18              | 17              | 35    | 368        |
| 1,800 | 11.7      | 3.4    | 0.3    | 20              | 20              | 40    | 336        |
| 1,900 | 12.3      | 3.9    | 0.3    | 24              | 24              | 48    | 295        |
| 2,000 | 13.3      | 4.2    | 0.2    | 28              | 28              | 56    | 273        |
| 2,100 | 14.7      | 4.4    | 0.2    | 32              | 32              | 64    | 264        |
| 2,200 | 15.8      | 4.7    | 0.2    | 37              | 37              | 74    | 246        |

## Fuel

The Northstream has two main fuel tanks located amidships. They are crossfed so they likely will always show approximately the same amount of fuel. The fuel level of each tank should be checked and logged at the start and end of each day. To check the fuel, the valves at the top and bottom of each sight glass should be opened, then closed after noting the level.

Important Note: Both valves on each side must remain closed when not being checked. Leaving them open will create a fire hazard.

## Stabilizers

The Northstream is equipped with roll stabilizers to reduce roll in moderate to heavy seas.



When underway, the control should be set to Run and the Auto mode on. Gain can be set from 10 to 100. Higher gain produces more action and correction which should be used at slower speeds. The typical setting is for Gain=60.

Important Note: When docking the control must be set to Park, or damage may occur to the system.

## Bow and Stern Thrusters

Northstream is equipped with bow and stern thrusters which can be controlled from each of the three stations, as well as the remote control. It is a 24VDC system with separate battery banks located adjacent to each thruster. There is a single battery charger which is located in the forward bulkhead of the engine room to port.



## Heating and Cooling Systems

The Northstream has a diesel heating system which will heat the cabins as well as domestic continuous hot water. There is also a combined Air Conditioning/Heat Pump which may be used for cooling or heating the vessel. The diesel heating system is normally used with the summer mode switch on to provide supplemental heat to the domestic water heater. It is also used in cooler weather with the summer mode switch off to provide heat to the cabins. The heat pump system is the best option for providing heat when connected to shore power whereas the diesel heating system is best suited for heating the cabins when not connected to shore power.

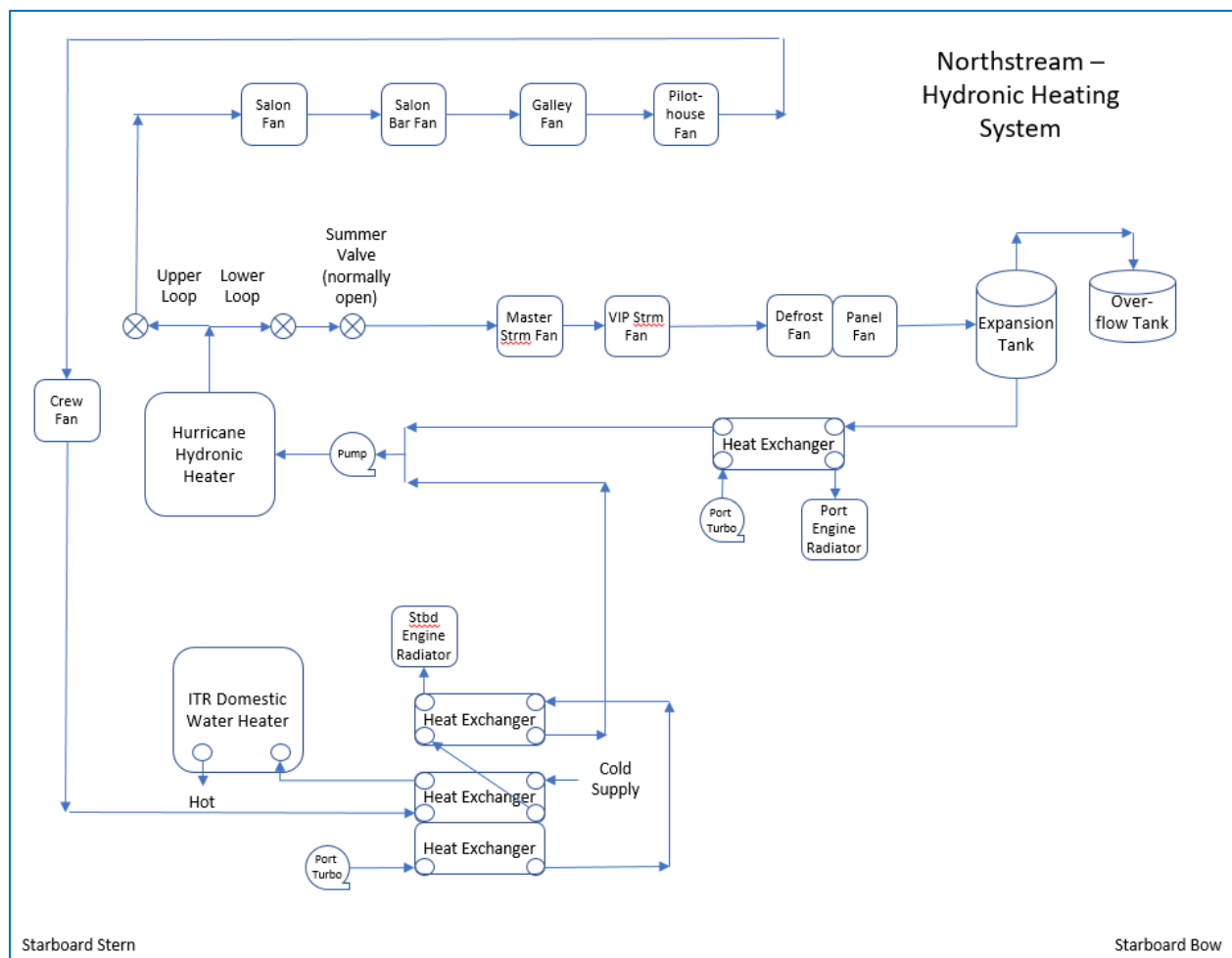
### Diesel Heater

The diagram below shows the basic schematic of the diesel heating system. There are two diesel water heaters: 1) the ITR WaterHeater Domestic Water Heater which heats water for showers and sinks, and 2) the Hurricane II Hydronic Heater which provides cabin heat and supplemental heat for the domestic hot water heater. The system also exchanges heat with the engines which will provide supplemental heat from the engines to the domestic water heater and the hydronic heater for the cabin.

The ITR WaterHeater and the Hydronic Heater operate on 12VDC and 125VAC (optionally). 12VDC is for the control circuit and 125VAC is for an electric 1,500 watt water heater which should be used when on shore power only. Power for the diesel heaters is routed directly from the house batteries. There are circuit breakers located near each heater.

There is a switch for the summer loop valve located under the on/off switch for the Hydronic Heater in the aft starboard corner of the saloon. Pressing the top of this rocker switch will stop flow to the staterooms and pilothouse defrost and panel heat.

The system requires that power be turned ON to a circulation pump on the Inverter #1 circuit.



## Operation

- 1) Turn ON the Diesel Heater Pump (Inverter Load #1) on the master panel.
- 2) Turn ON the ITR WaterHeater (in galley as shown below).
- 3) Turn ON the Water Heater (H1-110V) on the master panel (only when on shore power).
- 4) Turn the ITR Hurricane Hydronic heater switch ON for supplemental heat for domestic hot water (In the aft port corner of the saloon, as shown below).
  - a. In Warm Weather: Turn ON Summer Loop in cold weather (In saloon. Press the top of the rocker switch).
  - b. In Cold Weather: Turn OFF Summer Loop in cold weather (In saloon. Press the bottom of the rocker switch).
- 5) Turn ON the Hydronic Water Heater (H1-110V) on the master panel (only when on shore power).
- 6) Adjust each of the white thermostats in each cabin to the desired temperature.

Notes: there is no master switch for the 12V circuit that powers the diesel heat system. It is directly wired from the house batteries with circuit breakers located near the heaters.

The diesel heaters will not provide heat to pre-heat the diesel engines.

If the engine is running, it not necessary to turn the heater pump on to heat the domestic water with the engine. Heat supplied by the starboard engine will provide supplemental heat for domestic hot water while the engine is running by heating the inlet to the ITR Waterheater. However, it is best to leave the pump switch ON as it will only operate when needed anyway.

Galley Controls showing the ITR WaterHeater control and the old summer Loop switch.



Saloon Controls showing the ITR Hurricane Hydronic Heater control.





## Air Conditioning/Heat Pump

The air conditioning/heat pump system requires either shore power or the 25 kW generator. It has separate controls in most of the different cabins. The Primary Service Panel has switches for each control zone. It is best to only turn on the breaker for the desired zone. It is also necessary to switch on the Air Cond Pump switch located above the zone switches. Only the pump at the top of a desired zone need be switched on.



After switching power on to a given zone/cabin, the panel in that cabin should be set as described and shown below. Note that there are three Air Cond Pumps and they are logically aligned with the zones below them on the panel. The pump switch above a given zone must be ON to allow that zone(s) to operate.

- 1) Push Cool or Heat as desired.
- 2) The Fan mode will be automatic unless overridden
- 3) The current room temperature will be displayed on the panel
- 4) To set the desired temperature, press Set see the current set temperature and then Up or Down to adjust
- 5) Press Temp to return to the current temperature display



## Fresh & Salt Water Systems

### Fresh Water System

There are two pumps: 12V and 125VAC. One or the other should be kept on at all times, unless you are using shore water supply. Generally the 12V pump is the primary pump used, and the 125VAC pump is for backup.

### Watermaker

The watermaker is located in the lazarette on the starboard side. Control of the watermaker is generally always from the remote panel in the pilothouse. There should not be a need to use the manual controls in the lazarette.

To begin operating the watermaker:

- 1) Start the 20kW generator
- 2) Turn ON the master switch on the Primary Electrical Panel
- 3) Press the Start/Stop button on the watermaker panel as shown below

Important Note: The watermaker may be run when the boat is underway or at anchor. It should not be run when or where water has visible debris or algae.

To shut down the watermaker:

- 1) Press the Start/Stop button on the watermaker panel as shown below
- 2) After the panel show that the system has shut down, turn OFF the master switch on the Primary Electrical Panel

Important Note: Neither the master switch nor the generator should be turn off until the shut down cycle has been completed.

Under typical summer water temperatures, the Watermaker should produce 50 GPH of fresh water.



For service reference:

Parts orders: Tiana Newberry [Tiana@fcewatermakers.com](mailto:Tiana@fcewatermakers.com)

Technical Support: Rob Bailey, [Rob@fcewatermakers.com](mailto:Rob@fcewatermakers.com)

## Salt Water

### Washdown System

There are two pumps: 12V and 125VAC, providing for redundancy . Chose one or the other periodically when needed to wash down the anchor and bow area. Power should not be provided to both pumps at the same time.

### Bait Tank

There is a master switch on the secondary panel (as shown below), plus another panel with a switch for each pump in the lazarette. (There was a switch in the port swim platform cabinet which was bypassed.) All switches must be turned on for the system to operate. The valves are normally left in the open positions and don't need to be adjusted.



## Gray Water

All grey water (sinks, showers, etc.) flows directly overboard, including the garbage disposal in the galley. The garbage disposal drain flows directly overboard. All other grey water drains and the bilge pumps flow to a single pipe with runs the starboard side of the hull and exits at the stern.

## Head and Sanitation

The Master and Guest Staterooms have electric macerating heads. The pushbutton controls for these heads are poorly labeled and will probably need explanation for passengers. The crew head is a Vacuflush. The master and guest heads flow into a single tank. A separate tank is maintained in the lazarette for the crew head.

Important note: Do not dispose of flushable wipes or any feminine products in any of the heads. It is acceptable to put toilet paper in the master and guest stateroom heads, but not the Vacuflush head in the crew's quarter. Plastic bags are kept in each head for non-flushable materials.

After dumping either of the black water tanks, run water to fill the bow about 3 inches, then add 1 tablespoon per person of Zaal Noflex Digester powder to each head and flush the head. Continue with 1 tablespoon per person every two days. A container of Noflex Digester is provided in each bathroom. Do not overuse as a "little goes a long ways." Even though the master and guest heads flow to the same tank, they should each receive the appropriate amount of Digester to eliminate odors.

The valves from the two black water tanks are generally left in the open position so that they may be drained simply by turning ON the master switches on the panel. Do not leave the pumps running after the tanks are dry. We recommend setting a five minute timer on your smartphone to ensure they are not left running, which will burn out the pumps.

## Washer and Dryer

The dryer requires either shore power or the 20kW generator in order to operate. The washer may be operated on the 6kW generator, although it is best to use the 20kW generator for all operations of the washer/dryer. This is to prevent overloading of the 6kW generator or the dryer.

Important Note: Always use shore power or the 20kW generator for the washer or dryer.

## Audio Visual

There is a primary audio/visual system which provides audio/video in the saloon as well as audio in the pilothouse and flybridge. There are also individual TV's in the staterooms which have access to Direct TV. And there are individual stereo units in the master and guest staterooms.

The TV's and stereos in the staterooms are self-explanatory. This section focuses on the AV system in the saloon.

The primary components of the system include:

- Monitor and remote to raise or lower it (The remote looks like a garage door remote)
- Bose DVD player and audio amplifier (located in main cabinet)



- Direct TV tuner
- Satellite TV controller and antenna
- Bluetooth audio receiver
- AppleTV (for audio or video)

There is a binder on board with selected DVD's for your entertainment.

If you only desire audio, then the monitor does not need to be raised and the satellite master switches do not need to be activated. However, if you wish to use the satellite TV, it is best to start it up and keep it operating as it takes 10 minutes or more to locate and lock in on a signal.

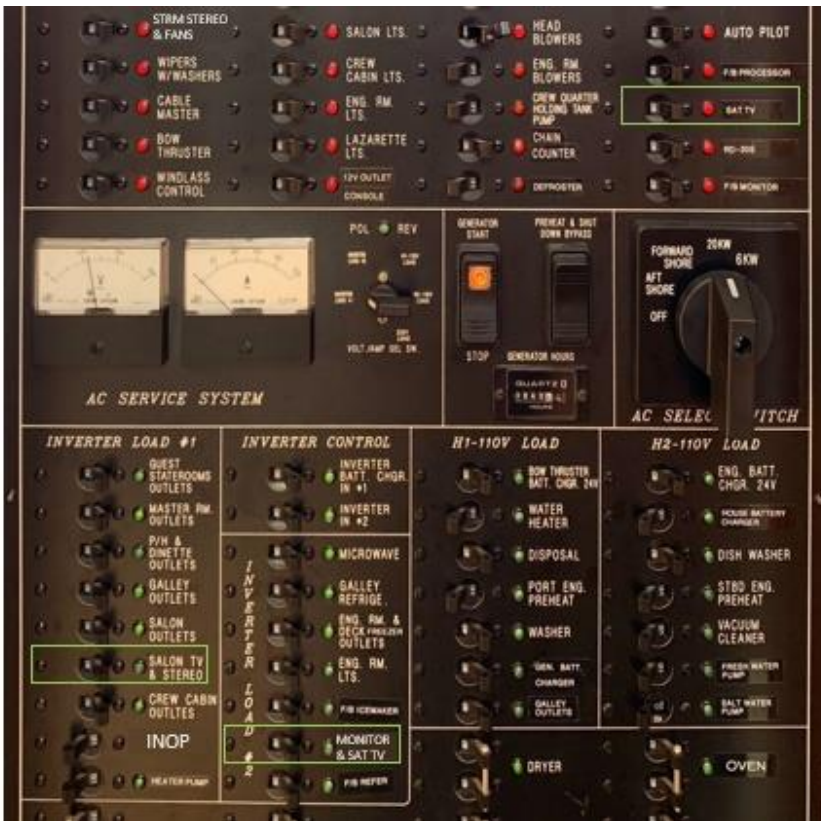
Northstream is equipped with a universal remote control for the saloon system. There are also individual remotes which may be used for backup. The AppleTV remote will probably be desired for control of the AppleTV. It makes password entry and operation easier than the universal remote. We have found that the Universal remote does not always start up the AppleTV. Sometimes it seems to start up when the play button is pushed.

AppleTV - An AppleTV receiver is provided for either playing music or video through your iTunes account or for using AirPlay with your Apple iPhone or iPad. To utilize AppleTV, you will need to set up a hotspot on your phone for WiFi and connect to it using the settings function on the AppleTV menu. You could also connect to WiFi if it is provided at a dock location.

Follow these steps to start up the full system:

- 1) Turn on the following master switches:
  - a. Saloon TV & Stereo
  - b. Sat TV
  - c. Monitor & Sat TV
- 2) Raise the Monitor with the "Garage Door Remote"
- 3) Turn on the Satellite system. The control is located on the left side of the far right cabinet as shown in the below image. It will normally take 10 to 15 minutes to acquire the satellite signals.
- 4) Use the universal remote to select and control the desired source.

The system can be operated on the inverter, the 6kW or 25kW generator, or shore power. The required breakers on the Primary Service Panel are noted in the image below.



Bluetooth Audio – Northstream has a Bluetooth receiver to make it easy to play audio from your phone or iPad. The receiver looks like the image below and is located on top of the AV equipment cabinet. You can connect using either NFC or Bluetooth pairing as described below.



NFC (Near Field Communication) Pairing - If you have an NFC-equipped device, you can quickly pair the music receiver with a simple tap.

1. Disconnect the existing paired device.
2. With NFC enabled on your device, tap the music receiver until a pairing request pops up.
3. Confirm the pairing request.

Usage Tips:

1. Tapping the paired music receiver will disconnect or reconnect it.
2. For an NFC-equipped device (such as iPhone 6) that does not support NFC-pairing, you can pair it via Bluetooth

Bluetooth Pairing

On your smart device, turn on Bluetooth and pair “TP-LINK\_Music”.

Usage Tips:

1. Tapping the paired music receiver will disconnect or reconnect it.
2. To pair a new smart device, disconnect the current one first.
3. You can connect the music receiver to two previously paired devices, but it can only play music from one device at a time.
4. The music receiver will be disconnected if your device's Bluetooth signal has been blocked or out of range (66 feet/20 meters) for more than 5 minutes.

## Internet and Cellular

There is a cellular signal booster installed on Northstream with an antenna on the masthead. It will boost your signal when in remote areas which would not otherwise receive a strong signal. However, you will necessarily not see an increase in the number of “bars” on your phone. Nevertheless, it is still working in the background. The 12V switch for “Cellular and Wifi” must be turned on for the cellular signal booster.

The “Cellular and Wifi” switch will also enable a Wifi network called Northstream. The Wifi network may provide a signal, but is generally not used on charter trips. Instead, charter guests should utilize their hotspots on their phones for Wifi.



# Operating Procedures

## Preparing to Get Underway

If the engines have not been run in a couple days, then the day before starting out, the engine heaters should be energized by switching ON the two breakers on the Primary Service Panel. If this is forgotten, then the engines may be started but one can expect some black smoke and they must be warmed up for 15 minutes before engaging the transmission.

- 1) Check engine room
  - a. Check and record (in the ship's log) the oil level in each engine. Add oil if the level is below the minimum marker. Oil is added with a funnel into the dipstick receiver.
  - b. Check the coolant level for each engine (it should no lower than an inch from the bottom of the reservoir. If it is low, then fill the reservoir with the coolant labeled 1:1. Don't remove the radiator cap.
  - c. Check and record the fuel level in each tank. To check the fuel, the valves at the top and bottom of each sight glass should be opened, then closed after noting the level. Both valves on each side must remain closed when not being checked. Leaving them open will create a fire hazard.
  - d. Check the sight glass for the two generator saltwater intakes and the two main engine intakes.
- 2) If tied to a dock with shore power:
  - a. Remove water hose if connected
  - b. Fill freshwater tanks
  - c. Turn the AC Selector Switch on the Primary Service Panel to 20kW if you plan to run a high power load (Oven, Cooktop, Dryer, Water Maker or Air Conditioning) and start generator or to 6kW if don't want the generator and plan to use it in standby mode. It can also be run started and manually if you wish to have fully charged batteries when you arrive at a new anchorage.
  - d. Changeover all breakers on Primary and Secondary Service Panels
  - e. Switch off breakers on dock power post(s)
  - f. Disconnect and store shore power cords
- 3) If at anchor:
  - a. Turn the AC Selector Switch on the Primary Service Panel to 20kW if you plan to run a high power load (Oven, Cooktop, Dryer, Water Maker or Air Conditioning) and start generator or to 6kW if don't want the generator and plan to use it in standby mode. It can also be run started and manually if you wish to have fully charged batteries when you arrive at a new anchorage.
  - b. Changeover all breakers on Primary and Secondary Service Panels
- 4) Secure tender.
- 5) Secure swim ladder by folding up and tying off rope, shut transom door.
- 6) Shut all windows/portholes below the deck line.
- 7) Start Engines and Systems – Start with turning on all the systems in the pilothouse and then proceeding to the flybridge or aft controls if desired.
  - a. Start engines



- b. Check transmission oil
  - c. Secure bulkhead doors
  - d. Turn on Maretron displays
  - e. Turn on Furuno systems in the pilothouse
  - f. Ensure GPS is set to GPS #1 (Located on the panel to starboard in pilothouse. GPS #2 has operated intermittently at times and can be used as a backup.)
  - g. Start Nobeltec computer. (if this does not start, there is a GFI outlet behind the instrument panel which may need resetting. It is accessible through a panel within the cabinet on the Port side of the pilothouse.
  - h. Confirm VHF to channel 16 and volume appropriate.
  - i. Proceed to the flybridge if desired. Start all flybridge controls.
  - j. Test bow and stern thrusters
  - k. Center steering wheel
  - l. Select "Take Control" of the engine controls.
- 8) If tied to a dock
- a. Cast off
  - b. Retrieve all lines
  - c. Bring fenders on board
- 9) If at anchor:
- a. Remove anchor bridal
  - b. Raise anchor, wash down the chain with the saltwater rinse as it is retrieved. The hose and nozzle are usual left connected on deck or it will be stored in the Portuguese bow
  - c. Secure anchor

## Running

Important Note: When underway, pay attention for logs, flotsam and deadheads.

It is generally recommended that speed be kept below 10 knots. The fuel consumption and range curves are linear under 12 knots and greater speed will increase fuel consumption and reduce range proportionately. See Power Systems and Fuel Management section for more information on fuel consumption.

Important Note: Northstream produces a deceptively large wake and overtaking smaller boats at a close range and/or at a speed greater than 10 knots will result in unhappy boaters. When near other boats (less than 1,000 feet) speed should be reduced to 8 knots or less.

While the onboard navigation electronics, plus the paper charts are sufficient for navigation, we find it helpful to utilize Navionics on an iPad for trip planning and navigation when enroute.

## At the Dock

See electrical section for information on different options for shore power. It is best to operate one of the generators while mooring to a dock to maintain full power for the bow and stern thrusters and the davit.

Northstream may be connected directly to pressure water, however this should only be used if water is of a good quality. The watermaker produces the best quality water available. If the water quality at the dock is good, then the tanks should be filled. There are two water fill locations with one on each side of the deck.

Generally, it is best to use the swim platform for accessing the dock.

When at anchor or at a dock, the swim ladder should be deployed in case a passenger or crew member falls overboard. And it should be secured by tying the line off before getting underway.

### Anchoring

See electrical section for information on correct settings for electrical power. It is best to operate one of the generators while anchoring to maintain full power for the davit and windlass.

On the panel in the pilothouse is an instrument for measuring the distance of chain fed out. It must be reset to zero before each use. **Follow the instructions on the panel to reset it.** The anchor may be raised or lowered using the switch in the pilothouse or flybridge or using the foot operated switches at the anchor.

Important Note: Always set the anchor with the bridle. It will damage the internal components of the anchor windlass if the anchor is set without using the bridle. The bridle is located in either of the compartments in the Portuguese bow.

The compartments in the Portuguese bow also contain the tool for tightening the clutch on the windlass and two spare anchors. One may be used as a stern anchor if desired.

When at anchor or at a dock, the swim ladder should left in the extended position in case a passenger or crew member falls overboard.

When anchoring, the anchor light should be switched on at night. This requires the master switch and the anchor light switch at the pilothouse helm to be turned ON.

When raising the anchor, it is imperative that the captain have a crew member spray the chain with the saltwater wash nozzle as the chain is retrieved. The hose and nozzle are generally kept on the deck attached to the valve.

### Operating Tender, Davit & Stand Up Paddleboards

#### Davit

The davit is used to raise and lower the tender. It is operated via a wireless remote control. When on a cruise, the remote control is kept in the compartment under the BBQ. When the Northstream is in home port, the remote is stored in the compartment to the right of the companionway stairs with the operating manuals. A backup wired remote is kept in the

compartment to port in the pilothouse instrument panel. It may be used in the event that the wireless remote control fails. The wired remote is connected to the panel on the backside of the davit.

The davit is powered by the 12V house batteries. It is a good practice to have one of the two generators operating with the house battery charger switched on when the davit is in use.

The davit boom must always be extended and locked when lifting or lowering the tender. It may be retracted for stowage, but this is not necessary or recommended. It is recommended that the boom always be left extended and locked. The davit allows for continuous rotation, so it may be rotated 360 or more degrees when stowing.

The tender must be raised from and lowered to the port side of the deck. When positioning the tender to be raised, be sure it is facing aft as it is not possible to rotate it once in the air. No one is allowed on board the tender when it is being raised or lowered. Always keep a bow and stern line in hand to control the tender while it is being raised or lowered.

### Tender

The tender may only be operated by the captain or crew member, or passenger if they have a boater's license and have been briefed by the captain for safe operation.

**Important Note:** No one is allowed to operate the tender unless they have a valid boaters license in their possession.

Each person on board the tender must wear a PFD (Personal Floatation Device) at all times.

An extra fuel tank is kept in the tender, along with a tool kit and other equipment as noted in the equipment list.

There is a charger for the tender which may be used if the battery needs charging. It is located in one of the upper deck compartments.

Towing the Tender – A bridle will be provided for towing the tender. Normally - TBC

### Stand Up Paddleboards

There are three stand-up paddleboards on board and they will normally be inflated before starting a charter. If they need refilling, there is an electrically operated air pump in the cabinets on the upper deck. It has an integral gauge to measure the air pressure in the SUP. There is also a separate gauge for checking the pressure.

**Important Note:** The SUP's should be inflated to 10-12 PSI.

When cruising, the SUP's must be stored on the upper deck.

## Galley Operations

The galley is all electric. It will normally be required to have either the 20 kW generator operating or shore power connected in order to use the appliances with a few exceptions. It should be possible to operate appliances like a coffee maker or microwave on the inverter. It should also be possible to operate the one or two burners on the range

It is possible to operate one or two of the range burners on the 6 kW generator if necessary.

Important note: If the 6 kW generator is overloaded, it will trip the circuit breaker located within the generator cabinet.

Important Note: When not operating the dishwasher, the master switch on the Primary Electrical Panel should be left in the OFF position. It has been found that the dishwasher may inadvertently start on its own when not expected, thus wasting water and power.

The circuit for the galley outlet #1 on the left side of the range also operates the instant hot water heater. Therefore, it cannot be used for other high load appliances like the espresso machine. And at night when on inverter power, it should be turned off or it will be a substantial drain on the inverter battery bank.

The freezer is in the shop/laundry room.

Important Note: Need to make sure the breaker for the freezer is on at all times and the pilot light is visibly ON at all times. (See image below.) It is a good practice to look to see that this light is on each time one walks through the laundry room.





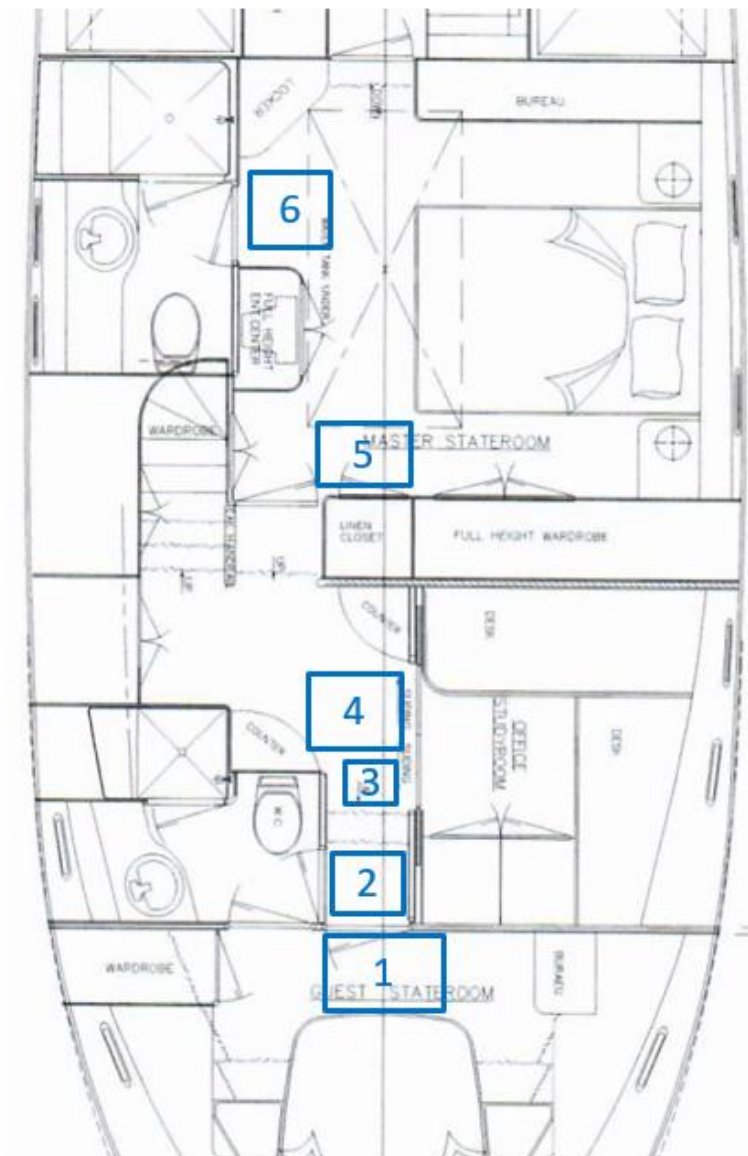
## Access to Compartments and Equipment

Extra keys are in the cabinet to on the right side of the pilothouse.

The Lazarette hatch door may be latched and locked from inside, but does not use a key.

## Bilge Compartments

There are five compartments in the bilge accessed through the floor of staterooms. Following is a diagram and inventory of the components in each compartment.



1. Guest Stateroom
  - a. Bow Thruster and batteries



## 2. Passageway (outside guest head)

- a. Inverter and Inverter bypass switch {update with new picture when installed} –  
The bypass switch allows the user to bypass the inverter in order to have line current (125V) available through one of the generators or shore power if the inverter were to fail. Normally it should be left of the off position (not bypassed).
- b. Vacuum attachments
- c. Portable vacuum
- d. Saltwater pumps – There are two saltwater pumps, one is 12V and the other is 125V. Only one should be turned on at a given time. It is recommended that the 125V pump be used when on shore power and the 12V pump be used all other times. These are located under the floor of the compartment.





### 3. Passageway (small opening)

- a. Black Water Tank & Sensors – there are two systems for measuring the tank levels of the black water tanks. One is the Maretron which displays in the pilot house. The other displays in each of the guest and master heads.





4. Passageway (large opening)
  - a. Black water overboard pumps and switches – There are two black water overboard pumps. Only one should be used at a time. The switches allow selection of which pump to use. Normally one of the switches is on and the other is off. When you wish to run the overboard pump, you should switch the master switch on (on the master panel in the pilothouse). When you turn it on, you must set a time (use your phone) for 10 minutes and shut off the master after that time. At the same time, you should watch the Maretron instruments in the pilothouse to ensure the level is diminishing and eventually indicates empty.
  - b. Guest head diverter valve – Normally this valve is in the position shown which will direct waste from the guest head to the black water tank.
  - c. Guest shower sump and pump
  - d. Inverter battery bank (6-6V 400Ah AGM Mastervolt) = 1,200 Ah @ 12V (Installed June 2019)
  - e. Fresh water pumps – There are two freshwater pumps, one is 12V and the other is 125V. Only one should be turned on at a given time. It is recommended that the 125V pump be used when on shore power and the 12V pump be used all other times.







5. Master Stateroom (forward)

- a. House Bank Batteries (4 6V 400Ah AGM Mastervolt) = 800 Ah @ 12V
- b. Maretron depthsounder
- c. Furuno depthsounder
- d. Power washer pump and valve – This is not used in typical charter operations. The valve should normally be left in the closed position.
- e. Through hull valves for guest and master heads and black water tank discharge – Normally the through hull valves for the guest and master heads should be closed and the black water tank left open. **Ask Andrew**
- f. Master stateroom head diverter valve – Normally this valve should be directed to the Tank and not to the Sea (as shown).
- g. House battery and Inverter battery parallel operation switch – this should only be used if a failure has occurred with either battery bank. There is also a remote switch connected to the parallel operation switch.



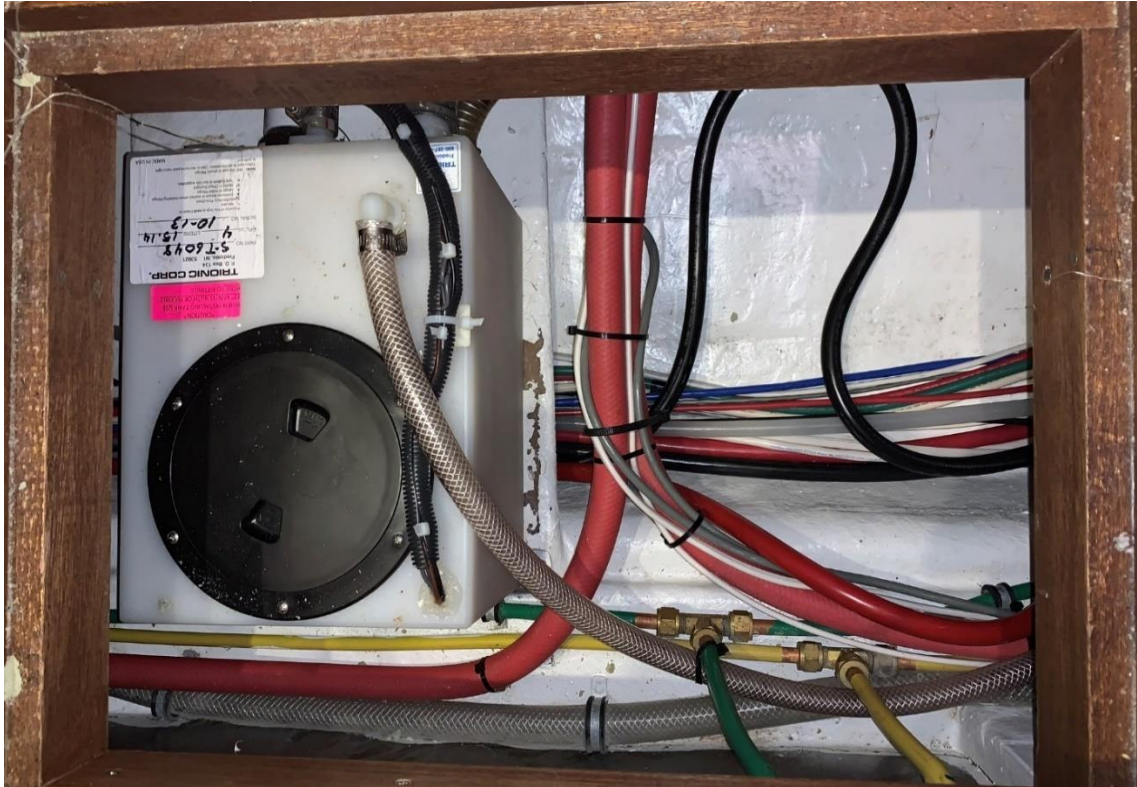








6. Master Stateroom (aft)
  - a. Master shower sump and pump





## Master Stateroom Cabinets

### Master Cabinet (Starboard – Forward)

This cabinet contains the house battery master disconnect. It also provides access to the house battery charger. And to the left in the photo is a junction box panel, which may be used for testing voltage and continuity.



### Master Closet (Port - Forward)

This closet contains a safe for owner access and below the floor is the fluxgate compass.

Important Note: It is important that no metal or electronic items be placed on the floor of this closet.



## Engine Room

The image below shows the engine room controls for the two generators. The upper panel is for the 25kW generator and the lower is for the 6kW generator. Normally, the 25kW generator is started from the remote panel in the pilothouse. And the 6kW generator is automatically started with the house battery voltage drops below a certain level. It can also be started from the inverter control panel in the pilothouse. See the Electrical section for more details on the generators.





The image below shows the electrical panels for the main engines. There should generally not be a need to change any of the switches. The only exception would be if the batteries of one engine are too low to start and the batteries of the other engine are adequate. In that situation, the batteries can be switched.

Also shown below is a utility air compressor. This is not normally used as the Northstream has a portable air compressor for the inflatable stand-up paddleboards.



The image below shows the battery charger for the engine batteries on the left. On the right is the charger for the bow and stern thrusters. It should also be noted that the power outlet on the left is dedicated to the central vacuum cleaner, however it is useful for space heaters during winter storage as it is independent of the inverters. The load of space heaters can be too great for the inverter circuit and cause the inverter breaker to trip.





## Lazarette Compartments

The image below shows the port side forward area. There is a breaker for the after shore power line. It is normally left in the ON position at all times.

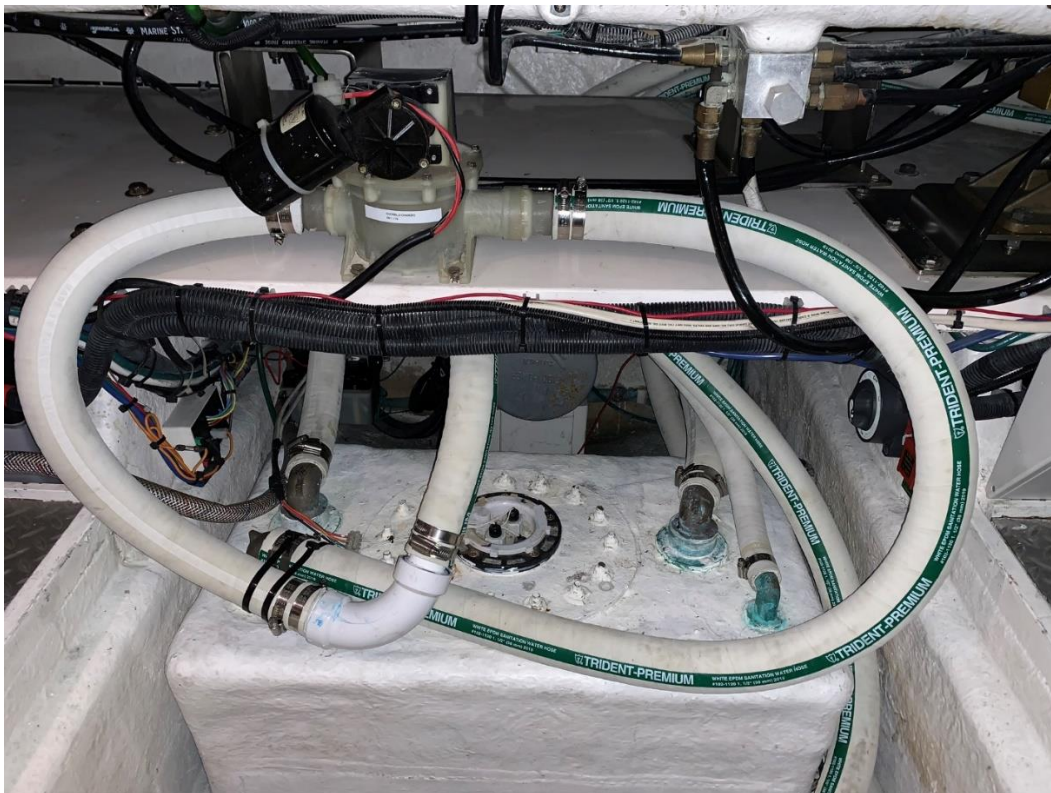
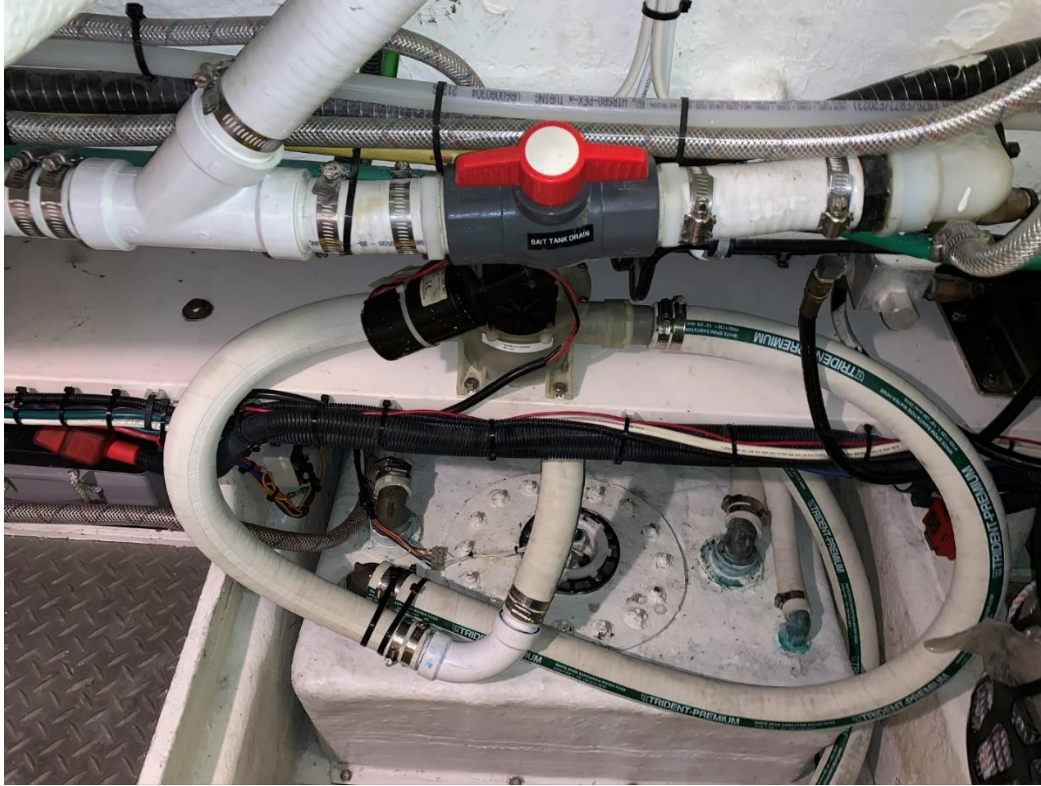


The following image shows the port side of the lazarette. Here there is a valve for the crew head. It is normally left in the position shown to direct black water to the tank and not overboard.





The images below show the center aft areas of the lazarette. Here one will find the crew head tank, the overboard pump, valves for the bait tank, rudder mechanics and the stern thruster.



The images below show the switches for the bait tank. In order to operate the bait tank, both switches should be turned on, the valves opened, the master switch turned on and the switch on the transom turned on. Is it in the storage locker?





The image below shows the master switch and fuse for the stern thruster, which is located in the lazarette.



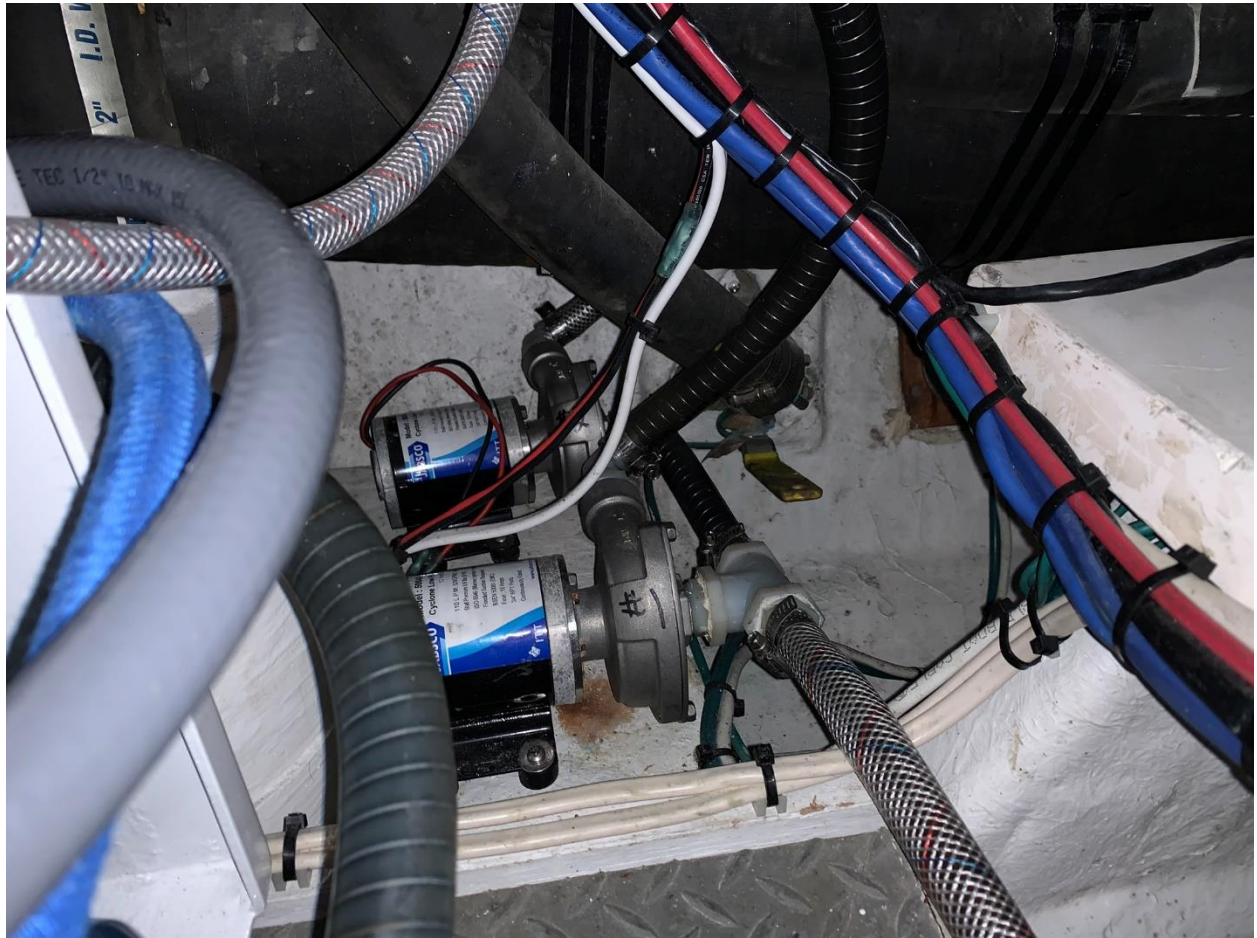


What is this fuse below ? Where are spare fuses?

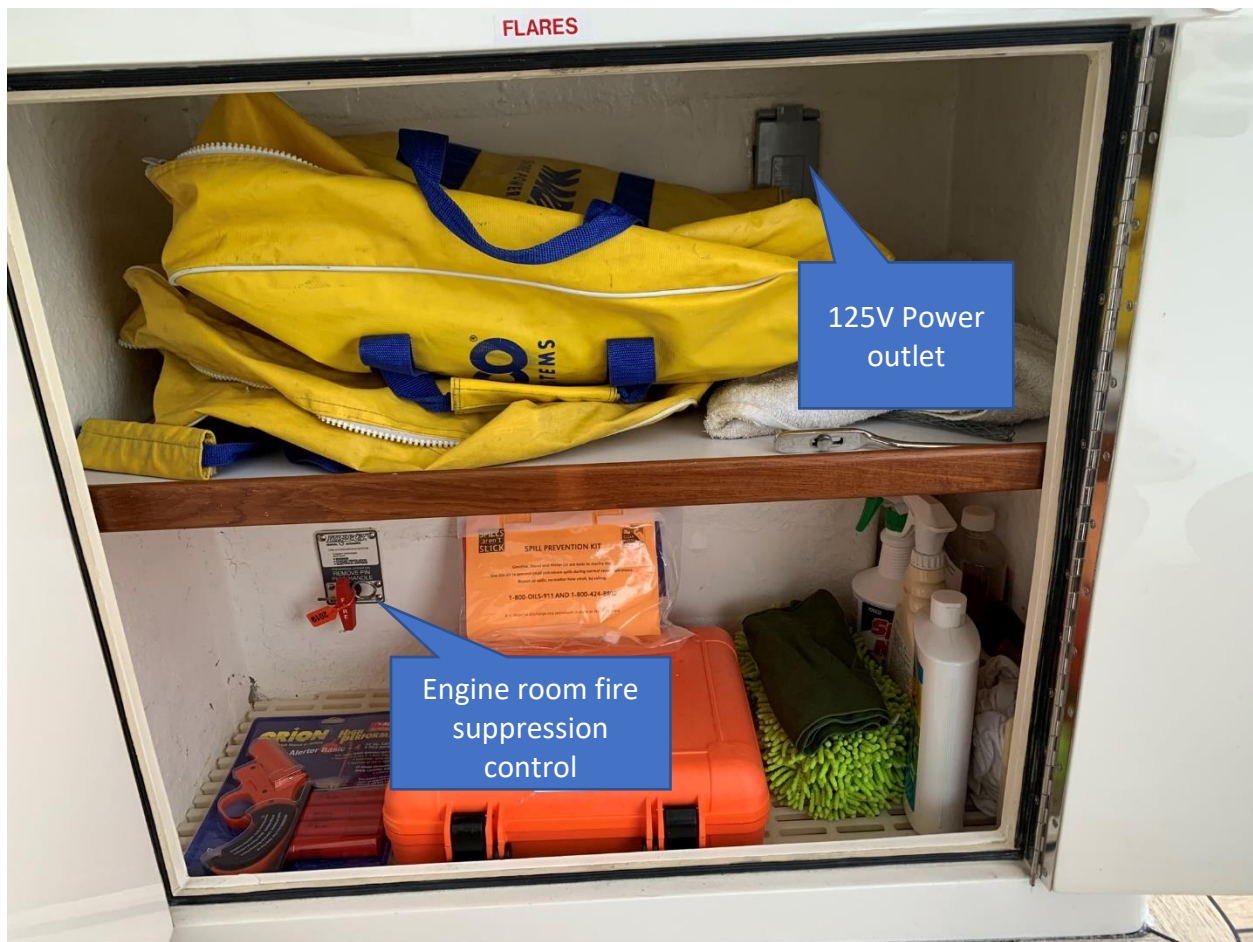








## Aft starboard cockpit compartment



## Safety and Emergency

Fire/Smoke, Flooding, Medical – Refer to NWE documentation.

### Floatation Devices

Northstream has eight automatically inflated PFD's (Personal Floatation Devices). Two are stored in the master closet, four in the guest stateroom closet and two in the crew's quarters.

In addition, Northstream has eight standard life vests stored in the flybridge cabinet to the left of the instrument panel. These are generally kept for emergency use.

There is a throwing horseshow style life ring kept on the upper deck and available for immediate use.

For emergency purposes, there is an auto-inflating life raft stored on the upper deck which will automatically release in case of capsizing or sinking of the vessel.

### Through Hulls and Bilge Pumps

TBC

### Special Fire Hazard – Lithium Batteries

Important Note: Pay particular attention to passengers charging of lithium batteries as they may ignite a fire if they overheat. They should only be charged in the pilothouse or salon during daytime hours when passengers or crew are nearby.

### Inoperative Items

The abbreviation "INOP" is used throughout the vessel to note circuits or equipment which is no longer used or does not operate. It stands for "Inoperative."

In addition to those items placarded, the following equipment is also inoperative.

- The satellite phone is not operable. The boat operator should use their cell phone or the VHF for emergency communication.
- The Manual engine controls in the pilothouse do not operate.
- Some LED's on the panels do not light up. The position of the switch (on or off) is the best indicator.
- The troll function on the engine controls is not operational.



## Silverplate Utensils

**Important Note:** Normally the US Navy silverware is not onboard for charters. If it happens to have been left onboard, then it must be hand washed. The silverplate utensils must not be washed in the dishwasher or they will be permanently stained. See below for detailed instructions.

US Navy Silverplate Flatware (shown below)



### Care and Cleaning of Silver-plated Flatware

Do not ever clean silver-plated flatware or hollowware in a dishwasher due to the extreme heat that can be generated, physical damage, and potential adverse chemical exposure and cross-contamination with other metals such as stainless steel and certain detergents. This could lead to loss of silver plate, pitting or corrosion, or adhesion of the other metals onto the finish of the silver plate.

Do hand wash all silver-plate with a soft washing cloth in a plastic bowl with warm to medium hot water using a mild liquid detergent that does not have any lemon, citrus, or other acids or having “borax” as a base. Dove liquid detergent is an excellent choice for handwashing your silver plate.

When polishing your silver plate always use a top-shelf paste such as that made by MAAS Metal Cleaner. Always use a soft cotton fiber rag & polishing cloth made for this purpose. If kept in a felt lined chest silver plate will keep its shine for years & only require a gentle rub with the polishing cloth before use. With moderate use silver plate may require a professional cleaning every 4 to 5 years.